

SET 4 – Multiple Choice Questions

151–200 MCQs

- 151.** If $A = \{1, 2, 3\}, B = \{a, b\}$, then $n(A \times B)$ is ?
(a) 3
(b) 6
(c) 2
(d) 5
- 152.** If $n(A) = 4, n(B) = 5$, then number of elements in $A \times B$ is:
(a) 9
(b) 20
(c) 10
(d) 25
- 153.** If $A = \{p, q\}, B = \{1, 2, 3\}$, then $A \times B$ has:
(a) 5 elements
(b) 6 elements
(c) 3 elements
(d) 9 elements
- 154.** If $A \times B = \emptyset$, then:
(a) $A = \emptyset$ or $B = \emptyset$
(b) $A \neq \emptyset, B \neq \emptyset$
(c) A and B finite
(d) None
- 155.** If $n(A) = m, n(B) = n$, then number of relations from A to B is:
(a) 2^{m+n}

- (b) $2mn2^{\{mn\}}2mn$
- (c) $nmn^{\wedge}nmn$
- (d) $nmn^{\wedge}mnm$

156. If A has 2 elements, B has 3 elements, number of functions from A to B is:

- (a) 6
- (b) 8
- (c) 9
- (d) 12

157. The set of all second elements of ordered pairs of relation R is called:

- (a) Domain
- (b) Codomain
- (c) Range
- (d) Image set

158. The set of all first elements of ordered pairs of relation R is called:

- (a) Domain
- (b) Codomain
- (c) Range
- (d) Preimage

159. If $R = \{(x,y): y = x+1, x \in \{1,2,3\}\}$, then range = ?

- (a) $\{1,2,3\}$
- (b) $\{2,3,4\}$
- (c) $\{0,1,2\}$
- (d) $\{3,4,5\}$

160. Relation $R = \{(a,b): a = b\}$ on set A is:

- (a) Reflexive
- (b) Symmetric
- (c) Transitive
- (d) All of these

161. Relation $R = \{(a,b): a \text{ divides } b\}$ on N is:

- (a) Reflexive and Symmetric

- (b) Reflexive and Transitive
- (c) Symmetric only
- (d) None

162. Number of one-one functions from set with 3 elements to set with 3 elements is:

- (a) 3
- (b) 6
- (c) 9
- (d) 27

163. Number of onto functions from set with 2 elements to set with 2 elements is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

164. Identity function is:

- (a) $f(x) = x$
- (b) $f(x) = 1$
- (c) $f(x) = 0$
- (d) $f(x) = c$

165. Constant function is:

- (a) $f(x) = c$
- (b) $f(x) = x$
- (c) $f(x) = x^2$
- (d) $f(x) = 1/x$

166. Range of $f(x) = c$, c constant, is:

- (a) $\{c\}$
- (b) $\mathbb{R}$
- (c) $\mathbb{R}^+$
- (d) $\{0, 1\}$

167. Range of $f(x) = |x-1|$ is:

- (a) $[-1, \infty)$
- (b) $[0, \infty)$
- (c) $(-\infty, \infty)$
- (d) $(-\infty, 0]$

168. Minimum value of $f(x) = (x-2)^2$ is:

- (a) -2
- (b) 0
- (c) 2
- (d) 1

169. Maximum value of $\sin x + \cos x$ is:

- (a) $\sqrt{2}$
- (b) 1
- (c) 2
- (d) None

170. Minimum value of $\sin x + \cos x$ is:

- (a) $-\sqrt{2}$
- (b) -1
- (c) 0
- (d) None

171. Domain of $f(x) = \sqrt{x^2-9}$ is:

- (a) $x \geq 3$
- (b) $x \leq -3$ or $x \geq 3$
- (c) $x > -3$
- (d) all real

172. Domain of $f(x) = 1/\sqrt{9-x^2}$ is:

- (a) $|x| < 3$
- (b) $|x| \leq 3$
- (c) $|x| > 3$
- (d) all real

173. If $f(x) = \sqrt{4-x^2}$, domain is:

- (a) $|x| \leq 2$
- (b) $|x| < 2$
- (c) $x \geq 2$
- (d) $x \leq -2$

174. Range of $f(x) = \sqrt{4-x^2}$ is:

- (a) $[0,2]$
- (b) $(0,2)$
- (c) $(-\infty,2]$
- (d) $(-2,2)$

175. Domain of $f(x) = 1/(x^2-9)$ is:

- (a) $\mathbb{R} - \{\pm 3\}$
- (b) $\mathbb{R}$
- (c) $\mathbb{R} - \{3\}$
- (d) $\mathbb{R} - \{-3\}$

176. Range of $f(x) = x^2-2$ is:

- (a) $[-2, \infty)$
- (b) $(-\infty, \infty)$
- (c) $(-\infty, -2]$
- (d) $(0, \infty)$

177. Domain of $f(x) = \log(5-x)$ is:

- (a) $x < 5$
- (b) $x \leq 5$
- (c) $x > 5$
- (d) all real

178. Domain of $f(x) = \log(x^2-4)$ is:

- (a) $x > 2$ or $x < -2$
- (b) $|x| \geq 2$
- (c) $x \neq \pm 2$
- (d) all real

179. Range of $f(x) = \log(x^2-4)$ is:

- (a) $\mathbb{R}$
- (b) $\mathbb{R}^+$
- (c) $\mathbb{R} - \{0\}$
- (d) $(0, \infty)$

180. Domain of $f(x) = 1/(\sqrt{x})$ is:

- (a) $x \geq 0$
- (b) $x > 0$
- (c) $x < 0$
- (d) all real

181. Range of $f(x) = \sqrt{x}$ is:

- (a) $[0, \infty)$
- (b) $\mathbb{R}$
- (c) $(-\infty, \infty)$
- (d) $(-\infty, 0]$

182. Domain of $f(x) = e^{(-x)}$ is:

- (a) $\mathbb{R}$
- (b) $\mathbb{R}^+$
- (c) $(0, \infty)$
- (d) None

183. Range of $f(x) = e^{(-x)}$ is:

- (a) $\mathbb{R}$
- (b) $\mathbb{R}^+$
- (c) $(0, \infty)$
- (d) all real

184. If $f(x) = \log(1+x)$, then domain is:

- (a) $x > -1$
- (b) $x \geq -1$
- (c) $x < -1$
- (d) all real

185. If $f(x) = \log(1-x)$, then domain is:

- (a) $x < 1$
- (b) $x \leq 1$
- (c) $x > 1$
- (d) all real

186. Range of $f(x) = \log(1+x)$ is:

- (a) $\mathbb{R}$
- (b) $\mathbb{R}^+$
- (c) $(0, \infty)$
- (d) $\mathbb{R} - \{0\}$

187. Range of $f(x) = \log(1-x)$ is:

- (a) $\mathbb{R}$
- (b) $\mathbb{R}^+$
- (c) $(0, \infty)$
- (d) $\mathbb{R} - \{0\}$

188. Function $f(x) = x^3$ is:

- (a) Increasing everywhere
- (b) Decreasing everywhere
- (c) Constant
- (d) None

189. Function $f(x) = -x^3$ is:

- (a) Increasing everywhere
- (b) Decreasing everywhere
- (c) Constant
- (d) None

190. Function $f(x) = x^2$ is:

- (a) Increasing on $(0, \infty)$
- (b) Decreasing on $(-\infty, 0)$
- (c) Both (a) and (b)
- (d) Constant

191. Function $f(x) = \cos x$ is:

- (a) Periodic with period 2π
- (b) Periodic with period π
- (c) Periodic with period 4π
- (d) Not periodic

192. Function $f(x) = \sin x$ is:

- (a) Periodic with period 2π
- (b) Periodic with period π
- (c) Not periodic
- (d) Constant

193. Function $f(x) = \tan x$ is:

- (a) Periodic with period π
- (b) Periodic with period 2π
- (c) Not periodic
- (d) Constant

194. Function $f(x) = \cot x$ is:

- (a) Periodic with period π
- (b) Periodic with period 2π
- (c) Not periodic
- (d) Constant

195. Function $f(x) = \sec x$ is not defined at:

- (a) $(2n+1)\pi/2$
- (b) $n\pi$
- (c) 0
- (d) 2π

196. Function $f(x) = \operatorname{cosec} x$ is not defined at:

- (a) $n\pi$
- (b) $(2n+1)\pi/2$
- (c) 0
- (d) 2π

197. Function $f(x) = 1/x^2$ is:

- (a) Even
- (b) Odd
- (c) Neither
- (d) Both

198. Function $f(x) = x^4$ is:

- (a) Even
- (b) Odd
- (c) Neither
- (d) Both

199. Function $f(x) = x^3 - x$ is:

- (a) Even
- (b) Odd
- (c) Neither
- (d) Both

200. Function $f(x) = x^2 + x + 1$ is:

- (a) Even
- (b) Odd
- (c) Neither
- (d) Both

Answers – Set 4

151(b), 152(b), 153(b), 154(a), 155(b), 156(c), 157(c), 158(a), 159(b), 160(d),
161(b), 162(b), 163(b), 164(a), 165(a), 166(a), 167(b), 168(b), 169(a), 170(a),
171(b), 172(a), 173(a), 174(a), 175(a), 176(a), 177(a), 178(a), 179(a), 180(b),
181(a), 182(a), 183(c), 184(a), 185(a), 186(a), 187(a), 188(a), 189(b), 190(c),
191(a), 192(a), 193(a), 194(a), 195(a), 196(a), 197(a), 198(a), 199(b), 200(c).